

IN THE CLAIMS:

1 - 4. (Cancelled)

5. (Currently Amended) Heart control apparatus, comprising circuitry for generating a non-excitatory stimulus, and stimulus application devices for applying to a heart or to a portion thereof said non-excitatory stimulus, wherein said circuitry for generating a non-excitatory stimulus generates a stimulus which is unable to generate a propagating action potential, configured for applying a first stimulus to a first portion of the heart, said first stimulus having a first effect on the biomechanical behavior of the first portion of the heart, and a second stimulus to a second portion of the heart, said second stimulus having a second effect on the biomechanical behavior of the second portion of the heart, said first and second effects being different from each other, wherein said first effect is not prevention or amelioration of arrhythmia.

6 - 9. (Cancelled)

10. (Currently Amended) Heart control apparatus according to claim 5, wherein the first portion of the heart is the ~~right~~ left ventricle and the second portion of the heart is the right ventricle.

11. (Previously Presented) Heart control apparatus according to claim 5, configured for modifying the relation between the contraction of the left ventricle and the contraction of the right ventricle.

12. (Currently Amended) Heart control apparatus according to claim 5, configured for simultaneously controlling both ventricles, one control increasing the flow from one ventricle while the other control decreases the flow ~~from~~ from the other ventricle.

13. (Previously Presented) Heart control apparatus according to claim 5, configured for simultaneous application of said first and second stimuli.

14. (Previously Presented) Heart control apparatus according to claim 5, configured for controlling the heart for a few beats, every certain period of time.

15. (New) Heart control apparatus according to claim 5, wherein said first effect is a modification of contractility without a change in heart rate and without affecting a regular activation of the heart.

16. (New) Heart control apparatus according to claim 5, wherein said first effect and said second effect are configured for non-arrhythmic tissue.

17. (New) Heart control apparatus according to claim 5, wherein said circuitry is configured for a non-arrhythmic heart.

18. (New) Heart control apparatus according to claim 5, wherein said circuitry applies said stimuli in response to a desired increase in cardiac output and not in response to an onset of arrhythmia.

19. (New) Heart control apparatus according to claim 5, wherein said first effect is a decrease in contractility.

20. (New) Heart control apparatus according to claim 5, wherein said first effect is an increase in contractility.

21. (New) Heart control apparatus according to claim 5, wherein said first stimulus is configured to have said first effect on non-arrhythmic tissue.

22. (New) Heart control apparatus according to claim 5, wherein said first stimulus and said second stimulus are different.

23. (New) Heart control apparatus according to claim 5, wherein said first stimulus and said second stimulus include only non-excitatory stimuli.

24. (New) Heart control apparatus according to claim 5, wherein said first stimulus and said second stimulus include excitatory stimuli.

25. (New) Heart control apparatus according to claim 5, wherein said first stimulus is applied only if said circuitry detects that said heart is not in an abnormal activation.

26. (New) Heart control apparatus, comprising circuitry for generating a non-excitatory stimulus, and stimulus application devices for applying to a heart or to a portion thereof said non-excitatory stimulus, wherein said circuitry for generating a non-excitatory stimulus generates a stimulus which is unable to generate a propagating action potential, configured for applying a first stimulus to a first portion of the heart, said first stimulus having a first effect on the biomechanical behavior of the first portion of the heart, and a second stimulus to a second portion of the heart, said second stimulus having a second effect on the biomechanical behavior of the second portion of the heart, wherein said first effect is not prevention or amelioration of arrhythmia.

27. (New) Heart control apparatus according to claim 26, wherein said first stimulus and said second stimulus include excitatory stimuli.